

PROGRAMMING PRACTICE AND APPLICATIONS

CW4: COVID

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GUI Functionality

Panel 1: Welcome

When the application is loaded, the main window displays a welcome message along with some basic instructions, at the centre of the screen. At this point this will be the only panel that can be accessed. The user is instructed to select a date range using the start and end date boxes, located on the top right section. If the date range is from 13th of February 2020 to the 10th of February 2023, then the corresponding COVID data is displayed. Otherwise, an error message is displayed until the user selects an appropriate data range.

Panel 2: The Map

Once a date range has been selected, the user can then access the second panel. This panel gives the user a visual representation of the COVID death rates within each borough, on a map. Each borough displays its death rates using the colours red, orange, or green. Red represents the highest death rates; orange has an average amount of death rates and green shows the lowest amount of death rates.

Once a borough is selected, the user will be able to view more specific COVID information about this borough, in a new window. This information entails Google mobility data; specifics about COVID infections and deaths, within the date range selected.

Panel 3: Statistics

The statistics panel is split into three separate sections including two arrows, a label of the data along with the data. The arrow buttons are for the user to navigate backwards and forwards between the four statistics. The statistics shown in this panel are the percentage change in visits to parks; percentage change in visits to workplaces; average of total cases; and the total number of deaths.

Panel 4: Line Graph

The line graph allows the user to visualise a comparison of different statistics between two different boroughs. This is done by using drop down boxes where the user can choose which statistics to display. The data is distinctively represented with different coloured lines, allowing the user to compare the data between the boroughs. The user may select different statistics, each time displaying the appropriate data on a new line graph on the same window.

Unit Testing

The unit test is testing the Statistics Panel class. It tests the processStatistic method to make sure all the statistics from the data are being loaded correctly. It does this by choosing an arbitrary start and end date. Then using the assertEquals method it checks if the return value, when the processStatistic method is called, is the same as the value that is expected to be returned.

Individual Contributions

Ricky contributed towards the creation of the StatisticsPanel class. To do so he initialised a few instance variables to load and process the COVID data, as well as the start and end dates. The processStatistic method calculated the different statistics regarding the COVID data. This was done using a for loop and if statements and some temporary/local variables: count and total which are incremented if they fit into the appropriate data range. Additionally, he created set and get methods for the start and end dates.

Danny contributed towards the creation of the MapPanel class. This entailed setting up the user interface and handling related events about the COVID statistics within different boroughs. This class is linked with the CovidDataLoader class and therefore he created methods to generate and assign the appropriate data from each borough label, depending on the selected data ranges. There are various buttons that have been implemented within this class for each borough. These radio buttons ensure only one borough can be selected at a time. There are also some setter methods to enable the user to set an appropriate date range.

Danny also contributed towards the creation of the BoroughStatsWindow class. He created a processTotalData method which allowed him to calculate and store values of various COVID data (retail and recreation, grocery and pharmacy, etc). Using the processed data, the statisticsArea could display the specific data based on the borough and given date range. This class includes various GUI components, specifically displaying the relevant data in a concise manner.

Andrew contributed to the MainWindow class which involves setting up the application window. This page handles data loads other pages depending on the user's input and initialises controls for other pages. There are several components used in this class such as labels (error), date boxes (start and end), and main anchor pane (main window). There are two buttons (previous and next) which allow the user to navigate between the different pages of the application. When the user is navigating, the appropriate pages are loaded, this is done by the loadPage method. The user will not be able to navigate if no date range has been inputted, hence the noDateErrors method was created. This class solely depends on the user's input.

Ricky and Emmanuella contributed together towards the LineChartPanel class. This class entailed setting up interface components and the line graph functionality. There were a variety of components used such as buttons (start), combo boxes (choices, category) and a line chart (FXML). The combo boxes included the different boroughs and data categories. They are populated using the initialise method. Other combo boxes allowed the user to choose and update their selected borough and category. The chart allows two boroughs to be selected and one category choice at a time. The start button toggles startDisplay method which displays the COVID data on the line chart when the user clicks it.